

WHAT IS CLAIMED IS:

1. A method of manufacturing a laterally diffused metal
oxide semiconductor (LDMOS) device, comprising:

forming a lightly-doped source/drain region with a first
dopant, the lightly-doped source/drain region located between
first and second isolation structures; and

creating a gate over the lightly-doped source/drain region.

2. The method as recited in Claim 1 wherein forming includes
forming a lightly-doped source/drain region with a first N-type
dopant.

3. The method as recited in Claim 2 wherein the first N-type
dopant has an implant dose ranging from about $1\text{E}12$ atoms/cm² to
about $1\text{E}13$ atoms/cm².

4. The method as recited in Claim 3 wherein the first N-type
dopant has an implant dose of about $5\text{E}12$ atoms/cm².

5. The method as recited in Claim 1 further including
diffusing a second dopant at least partially across the lightly-

3 doped source/drain region and under the gate to form a first
4 portion of a channel.

6. The method as recited in Claim 5 wherein diffusing the
2 second dopant includes diffusing a second P-type dopant having an
3 implant dose ranging from about $1E13$ atoms/cm² to about $1E14$
4 atoms/cm².

7. The method as recited in Claim 5 wherein diffusing the
2 second dopant includes diffusing a second P-type dopant having an
3 implant dose about 100 times higher than an implant dose of the
4 first dopant.

8. The method as recited in Claim 5 further including
2 placing a heavy concentration of the first dopant in a region
3 adjacent a source side of the gate, and in the lightly-doped
4 source/drain region adjacent a drain side of the gate.

9. The method as recited in Claim 8 wherein placing includes
2 placing the heavy concentration of the first dopant in the lightly-
3 doped source/drain region a distance ranging from about 2000 nm to
4 about 3000 nm from the drain side of the gate.

10. The method as recited in Claim 8 wherein placing includes
2 placing an implant dose of the first dopant ranging from about 1E15
3 atoms/cm² to about 1E16 atoms/cm².

11. A method of manufacturing an integrated circuit,
2 comprising:

3 fabricating laterally diffused metal oxide semiconductor
4 (LDMOS) transistors, including:

5 forming a lightly-doped source/drain region with a first
6 dopant, the lightly-doped source/drain region located between
7 first and second isolation structures; and

8 creating a gate over the lightly-doped source/drain
9 region;

10 depositing interlevel dielectric layers over the LDMOS
11 transistors; and

12 creating interconnect structures in the interlevel dielectric
13 layers and interconnecting the LDMOS transistors to form an
14 operative-integrated circuit.

15 12. The method as recited in Claim 11 wherein forming
16 includes forming a lightly-doped source/drain region with a first
17 N-type dopant.

18 13. The method as recited in Claim 12 wherein the first N-
19 type dopant has an implant dose ranging from about $1E12$ atoms/cm²
20 to about $1E13$ atoms/cm².

14. The method as recited in Claim 13 wherein the first N-
type dopant has an implant dose of about $5E12$ atoms/cm².

15. The method as recited in Claim 11 further including
diffusing a second dopant at least partially across the lightly-
doped source/drain region and under the gate to form a first
portion of a channel.

16. The method as recited in Claim 15 wherein diffusing the
second dopant includes diffusing a second P-type dopant having an
implant dose ranging from about $1E13$ atoms/cm² to about $1E14$
atoms/cm².

17. The method as recited in Claim 15 wherein diffusing the
second dopant includes diffusing a second P-type having an implant
dose about 100 times higher than an implant dose of the first
dopant.

18. The method as recited in Claim 15 further including
placing a heavy concentration of the first dopant in a region
adjacent a source side of the gate, and in the lightly-doped
source/drain region adjacent a drain side of the gate.

19. The method as recited in Claim 18 wherein placing
2 includes placing the heavy concentration of the first dopant in the
3 lightly-doped source/drain region a distance ranging from about
4 2000 nm to about 3000 nm from the drain side of the gate.

20. The method as recited in Claim 18 wherein placing
2 includes placing an implant dose of the first dopant ranging from
3 about $1\text{E}15$ atoms/cm² to about $1\text{E}16$ atoms/cm².